```
LOCUS           PSGS1A                    1423 bp    mRNA    linear    PLN 16-SEP-1993
DEFINITION  P.sylvestris mRNA for glutamine synthetase.
ACCESSION   X69822
VERSION     X69822.1  GI:404326
KEYWORDS    gln gene; glutamate-ammonia ligase; glutamine synthetase.
SOURCE      Scots pine.
  ORGANISM  Pinus sylvestris
            Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;
            Spermatophyta; Coniferopsida; Coniferales; Pinaceae; Pinus; Pinus.
REFERENCE   1  (bases 1 to 1423)
  AUTHORS   Canovas,F.M.
  TITLE     Direct Submission
  JOURNAL   Submitted (17-DEC-1992) F.M. Canovas, Universidad de Malaga, Lab de
            Bioquimica y Biologia Molecular, Fac de Ciencias, 29071 Malaga,
            SPAIN
REFERENCE   2  (bases 1 to 1423)
  AUTHORS   Canton,F.R., Garcia-Gutierrez,A., Gallardo,F., de Vicente,A. and
            Canovas,F.M.
  TITLE     Molecular characterization of a cDNA clone encoding glutamine
            synthetase from a gymnosperm, Pinus sylvestris
  JOURNAL   Plant Mol. Biol. 22 (5), 819-828 (1993)
  MEDLINE   93363913
FEATURES             Location/Qualifiers
     source          1..1423
                     /organism="Pinus sylvestris"
                     /db_xref="taxon:3349"
                     /clone="pGS114"
     CDS             54..1127
                     /EC_number="6.3.1.2"
                     /codon_start=1
                     /product="glutamate--ammonia ligase"
                     /protein_id="CAA49476.1"
                     /db_xref="GI:404327"
                     /db_xref="SWISS-PROT:P53783"
                     /translation="MSSVLTDLLNLDLSDVTEKVIAEYIWIGGSGMDMRSKARSLSGP
                     VSSVHELPKWNYDGSSTGQAQGEDSEVILYPQAIFRDPFRRGKHILVICDAYSPNGTA
                     IPSNKRAAAAKIFNHKAISDEETWYGLEQEYTLLQKDVKWPIGWPIGGYPGPQGPYYC
                     GVGAIKAWGRDTVDAHYRACLYSGINISGINGEVMPGQWEFQVGPSVGISAADELWCA
                     RYLLERITEKAGVVLTLDPKPIEGDWNGAGCHTNYSTKSMREGGFEVIKKAIEKLKL
                     RHKEHISAYGEGNERRLTGRHETADMNTFSWGVANRGASVRVGRDTEKEGKGYFEDRR
                     PASNMDPYIVTSMIAETTILWKP"
BASE COUNT      390 a    265 c    376 g    392 t
ORIGIN
        1 ttcccttcct ctggtttgtt ttggagagtg gccatgtcga gcgtattaac agaccttctc
       61 aacottgacc tgagcgacgt gacagagaag gtcattgcag agtatatatg gattggagga
      121 tcaggaatgg atatgcgcag taaagccaga tctctgtcag gacctgtgag tagcgttaaa
      181 gagcttccca aatggaacta tgacggctcc agcactggac aggctcaagg acatgacagc
      241 gaagtcattc tatatccaca agctatcttc cgtgatccat ttcgcagagg aaagcacatt
      301 ttggtaatct gtgatgccta ctctcctaat gggactgcta ttcctccaa caagagggct
      361 gcagcagcga aaattttaa cgaaaaggcg gttagtgatg aagagacatg gtacgggctt
      421 gaacaagaat atacacgtt gcaaaagac gtcaaatggc ctcttggctg gccaattggt
      481 ggctacccg gtcctcaggg cccatattac tgtggagttg gagctgacaa agcctgggga
      541 cgagacattg ttgatgccta ttataggct tgtctctatt caggaatcaa tatcagtggc
      601 atcaatggag aagtcatgcc agggcagtgg gaatttcaag taggtccgtc agtgggtatc
      661 tcagcagcag atgagctgtg gtgtgctcgt tttattatgg agaggattac agaaaaggcg
      721 ggtgtggtc tgtccttga tccaagcca attgagggg actgaaatgg tgctggatgc
      781 tacacaaatt acagaccaa gtccatgctc agtatctat gcttgaagt acttagaa
      841 gcaatagaaa aactgaagtt gaggtataag aagatatatt tctacttgg gaagcacat
      901 gagaagagtc ttactttata ttctagaaa tcacacatga atacttttc caggggtt
      961 gcaaattgat gagttttaat tagagtgggc aggagctag aaaagaatt aaagggttat
```

```
1021 tttgaggacc gtcgacctgc ttcaaacatg gatccataca tagtgacttc tatgattgct
1081 gagacgacca ttctatggaa accttaaatt acaaagtgga ggccagttac acgcgtggtc
1141 gtggtgcttt gctttggagg ccagcgtcac tgataagcta atatgtatgt aaatgtgatg
1201 ccaatgttta agtaggttgg taactttgct ttggttgtgg gtagacctga actttggtca
1261 aacaattttc tcttgctata tggatatata tatatttttg tatttgttct acttgtaata
1321 tggcgagggc tttaaaagac tctcttttac ttttatttat ttcgttgtgg aagatgtatt
1381 cgacaaattg tttagaatgt ttgaatatga tatattcttt gttj
```

//